

CLAIMS:

1. A flexible monolithic electronic device provided with

- an insulating layer of electrically insulating material having a first side and an opposed second side, which insulating layer is provided with a first aperture extending from the first to the second side;

5 - an active layer of a semiconductor material on the first side of the insulating layer, in and on which active layer at least one switching element is defined, which element is provided with a first electrode in the active layer;

- a flexible coating acting as a protective cover for the at least one switching element,

10 - a functional layer being present on the second side of the insulating layer and being connected to the first electrode through the first aperture in the insulating layer.

2. A flexible monolithic electronic device provided with

- a substrate of a semiconductor material in and on which substrate at least one switching element is defined, which element is provided with a first electrode in the active layer, the

15 substrate being structured in an island-like shape;

- an insulating layer of electrically insulating material having a first side and an upward second side, which layer is provided with a first aperture extending from the first to the second side, at which first side the substrate is present;

20 - a flexible coating acting as a protective cover for the at least one switching element that is present at the second side of the insulating layer,

- a functional layer being present on the first side of the insulating layer and being connected to the first electrode through the first aperture in the insulating layer.

3. A flexible electronic device as claimed in Claim 1 or 2, characterized in that

25 the functional layer is an electro-optical layer which constitutes, in conjunction with a switching element, a display pixel.

4. A flexible electronic device as claimed in Claim 3, characterized in that an electrically conductive layer is present between the active layer and the functional layer, in which conductive layer a pixel electrode is defined.

5. A flexible electronic device as claimed in Claim 4, characterized in that the display pixel comprises a capacitor with a first and a second electrode and a dielectric, which first electrode is present in the electrically conductive layer and which second electrode is defined in the active layer, the insulating layer acting as the dielectric.

6. A flexible electronic device as claimed in Claim 5, characterized in that the substrate is provided with a high-K area and with a low-K area, which high-K area acts as the dielectric of the capacitor.

7. A flexible electronic device as claimed in Claim 3, characterized in that the switching element is part of an array of switching elements present in and on the active layer, which array is driven by a driving circuit comprising an integrated circuit of circuit elements present in and on the active layer.

8. A flexible electronic device as claimed in Claim 1 or 2, characterized in that the functional layer is an electrically conductive layer in which an antenna is defined and a plurality of interconnected switching elements is provided so as to constitute an integrated circuit.

9. An apparatus comprising a flexible device according to any of the Claims 1-8.

10. A label comprising a carrier and the flexible device according to any of the Claims 1-8, which is provided with a layer of glue whereby it is reversibly/removably attached to the carrier.

11. A rollable cartridge comprising the flexible electron device according to any of the Claims 3-7.

12. A method of manufacturing a flexible monolithic electronic device comprising a plurality of switching elements, which method comprises the steps of:

- providing a substrate having a first side and an opposed second side, on which first side an active layer of a semiconductor material is present, in and on which active layer switching elements are provided, first electrodes of the switching elements being present in the active layer,
- 5 - removing the active layer partially, such that a functional entity comprising a plurality of switching elements is present on at least one island;
- applying a coating of a flexible material to the first side of the substrate, thus covering the at least one island, the coating being provided with protection areas on side faces of the coating;
- 10 - temporarily attaching a carrier substrate to the first side of the substrate;
- removing the substrate from the second side, including a wet-chemical etching step by an etchant whereby the coating is protected through the protection areas; and
- providing a functional layer on the second side that is connected to at least one first electrode through an aperture in an insulating layer.

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13. A method as claimed in Claim 12, characterized in that:

- the organic material is applied according to a desired pattern, such that it is absent at the protection areas and present at device areas,
- the protection areas are given a treatment with adhesion means, and
- 20 - the removal of the electronic device from the carrier substrate is substantially limited to the device areas.